CLAIMS

1. A process for producing a UV-curable liquid polyurethane resin, characterized by subjecting (A) a polycarbonatediol having a molecular weight of 500-5,000, (B) a trifunctional alcohol, (C) a diisocianate compound to reaction in the presence of (D) a (meth)acrylate compound represented by the general formula $CH_2=CRCO(OC_nH_{2n})_pR'$ (where R is a hydrogen atom or a methyl group, R′ is a hydrogen atom, an alkoxyl group or a phenoxy group, n is an integer of 1-12, and p is an integer of 1-5), or by the general formula $CH_2=CRCO(OC_mH_{2m})_qOCOCR=CH_2$ (where R is a hydrogen atom or a methyl group, m is an integer of 2-12, and q is an integer of 1-14), and (E) a di(meth)acrylate compound of alkylene glycol, whose alkylene group is substituted by a lower alkyl group, and by adding (F) a hydroxyl group-containing (meth)acrylate to the resulting solution of urethane oligomers in (meth)acrylate, thereby carrying out terminal (meth)acrylating reaction of the urethane oligomers.

2. A process for producing a UV-curable liquid polyurethane resin according to Claim 1, wherein the terminal (meth)acrylating reaction is carried out after adding (G) a photopolymerization initiator and (H) a hindered phenol-based antioxidant having a molecular weight of 500-2,000 thereto.

3. A process for producing a UV-curable liquid polyurethane resin according to Claim 1, wherein after the terminal (meth)acrylating reaction of the urethane oligomers is carried out, (G) a photopolymerization initiator and (H) a hindered phenol-based antioxidant having a molecular weight of 500-2,000 are added thereto.

4. A process for producing a UV-curable liquid polyurethane resin according to Claim 1, wherein one of (G) a photopolymerization initiator

and (H) a hindered phenol-based antioxidant having a molecular weight of 500-2,000 is added thereto before the terminal (meth)acrylating reaction of the urethane oligomers is carried out, and the other is added thereto after the reaction is carried out.

5. A process for producing a UV-curable liquid polyurethane resin according to Claim 1, wherein the trifunctional alcohol as Component (B) is trimethylolpropane or an alkylene oxide adduct thereof.

6. A process for producing a UV-curable liquid polyurethane resin according to Claim 1 or 5, wherein the trifunctional alcohol as Component (B) is used in a proportion of 0.5-10 parts by weight on the basis of 100 parts by weight of the polycarbonatediol as Component (A).

7. A process for producing a UV-curable liquid polyurethane resin according to Claim 1, wherein the diisocyanate as Component (C) is an aromatic diisocyanate.

8. A process for producing a UV-curable liquid polyurethane resin according to Claim 1 or 7, wherein the diisocyanate as Component (C) is used in a proportion of 20-60 parts by weight on the basis of 100 parts by weight of the polycarbonatediol as Component (A) and in NCO/OH equivalent ratio of 1.01-2.00.

9. A process for producing a UV-curable liquid polyurethane resin according to Claim 1, wherein the (meth)acrylate compound as Component (D) is used in a proportion of 10-200 parts by weight on the basis of 100 parts by weight of the polycarbonatediol as Component (A).

10. A process for producing a UV-curable liquid polyurethane resin according to Claim 1, wherein Component (E) is 2,2-di(lower alkyl) -1,3-propanediol di(meth)acrylate.

11. A process for producing a UV-curable liquid polyurethane resin

according to Claim 1 ro 10, wherein the lower alkyl-substituted alkylene glycol di(meth)acrylate compound as Component (E) is used in a proportion of 1-20 parts by weight on the basis of 100 parts by weight of the polycarbonatediol as Component (A).

12. A process for producing a UV-curable liquid polyurethane resin according to Claim 1, wherein the hydroxyl group-containing (meth)-acrylate as Component (F) is used in NCO/OH equivalent ratio of 0.01-0.90 with respect to the terminal isocyanate groups of the resulting urethane oligomers.

13. A process for producing a UV-curable liquid polyurethane resin according to Claim 1, wherein the photopolymerization initiator as Component (G) is used in a proportion of 0.1-10 parts by weight on the basis of 100 parts by weight of the resulting urethane acrylate oligomers.

14. A process for producing a UV-curable liquid polyurethane resin according to Claim 1, wherein the hindered phenol-based antioxidant as Component (H) is used in a proportion of 0.1-10 parts by weight on the basis of 100 parts by weight of the resulting urethane acrylate oligomers.

15. A UV-curable liquid polyurethane resin having a viscosity (25℃) of 150,000-1,000,000 mPa · s, produced by a process according to Claim 1.

16. A UV-curable liquid polyurethane resin according to Claim 15, for use as a gasket molding material.

17. A UV-curable liquid polyurethane resin according to Claim 16, for use as an HDD gasket molding material.

18. A UV-curable liquid polyurethane resin according to Claim 15, 16 or 17, applicable to an automatic coating robot.

19. A process for producing a gasket, characterized by coating a UV-curable liquid polyurethane resin of Claim 15 to a substrate at a

temperature of 30° to 80℃, followed by ultraviolet ray irradication to cause curing reaction and by a high temperature treatment at 100° to 180℃.

CLAIMS

1. (As amended) A process for producing a UV-curable liquid polyurethane resin, characterized by subjecting (A) a polycarbonatediol having a molecular weight of 500-5,000, (B) a trifunctional alcohol, and (C) a diisocyanate compound to reaction in the presence of (D) a (meth)-acrylate compound represented by the general formula CH_2=CRCO(OC_n H_{2n})$_p$R′ (where R is a hydrogen atom or a methyl group, R′ is a hydrogen atom, an alkoxyl group, or a phenoxy group, n is an integer of 1-12, and p is an integer of 1-5), or by the general formula CH_2=CRCO(OC_mH_{2m})$_q$OCOCR-=CH_2 (where R is a hydrogen atom or a methyl group, m is an integer of 2-12, and q is an integer of 1-14), and (E) a di(meth)acrylate compound of alkylene glycol whose alkylene group is substituted by a lower alkyl group having 1 to 5 carbon atoms, and by adding (F) a hydroxyl group-containing (meth)acrylate to the resulting solution of urethane oligomers in (meth)-acrylate, thereby carrying out terminal (meth)acrylating reaction of the urethane oligomers.

2. A process for producing a UV-curable liquid polyurethane resin according to Claim 1, wherein the terminal (meth)acrylating reaction is carried out after adding (G) a photopolymerization initiator and (H) a hindered phenol-based antioxidant having a molecular weight of 500-2,000 thereto.

3. A process for producing a UV-curable liquid polyurethane resin according to Claim 1, wherein after the terminal (meth)acrylating reaction of the urethane oligomers is carried out, (G) a photopolymerization initiator and (H) a hindered phenol-based antioxidant having a molecular weight of 500-2,000 are added thereto.

4. A process for producing a UV-curable liquid polyurethane resin

according to Claim 1, wherein one of (G) a photopolymerization initiator and (H) a hindered phenol-based antioxidant having a molecular weight of 500-2,000 is added thereto before the terminal (meth)acrylating reaction of the urethane oligomers is carried out, and the other is added thereto after the reaction is carried out.

5. A process for producing a UV-curable liquid polyurethane resin according to Claim 1, wherein the trifunctional alcohol as Component (B) is trimethylolpropane or an alkylene oxide adduct thereof.

6. A process for producing a UV-curable liquid polyurethane resin according to Claim 1 or 5, wherein the trifunctional alcohol as Component (B) is used in a proportion of 0.5-10 parts by weight on the basis of 100 parts by weight of the polycarbonatediol as Component (A).

7. A process for producing a UV-curable liquid polyurethane resin according to Claim 1, wherein the diisocyanate as Component (C) is an aromatic diisocyanate.

8. A process for producing a UV-curable liquid polyurethane resin according to Claim 1 or 7, wherein the diisocyanate as Component (C) is used in a proportion of 20-60 parts by weight on the basis of 100 parts by weight of the polycarbonatediol as Component (A) and in NCO/OH equivalent ratio of 1.01-2.00.

9. A process for producing a UV-curable liquid polyurethane resin according to Claim 1, wherein the (meth)acrylate compound as Component (D) is used in a proportion of 10-200 parts by weight on the basis of 100 parts by weight of the polycarbonatediol as Component (A).

10. A process for producing a UV curable liquid polyurethane resin according to Claim 1, wherein Component (E) is 2,2-di(lower alkyl) -1,3-propanediol di(meth)acrylate.

11. A process for producing a UV-curable liquid polyurethane resin according to Claim 1 or 10, wherein the lower alkyl-substituted alkylene glycol di(meth)acrylate compound as Component (E) is used in a proportion of 1-20 parts by weight on the basis of 100 parts by weight of the polycarbonatediol as Component (A).

12. A process for producing a UV-curable liquid polyurethane resin according to Claim 1, wherein the hydroxyl group-containing (meth)-acrylate as Component (F) is used in NCO/OH equivalent ratio of 0.01-0.90 with respect to the terminal isocyanate groups of the resulting urethane oligomers.

13. (As amended) A process for producing a UV-curable liquid polyurethane resin according to Claim 2, wherein the photopolymerization initiator as Component (G) is used in a proportion of 0.1-10 parts by weight on the basis of 100 parts by weight of the resulting urethane acrylate oligomers.

14. (As amended) A process for producing a UV-curable liquid polyurethane resin according to Claim 2, wherein the hindered phenol-based antioxidant as Component (H) is used in a proportion of 0.1-10 parts by weight on the basis of 100 parts by weight of the resulting urethane acrylate oligomers.

15. A UV-curable liquid polyurethane resin having a viscosity (25℃) of 150,000-1,000,000 mPa・s, produced by a process according to Claim 1.

16. A UV-curable liquid polyurethane resin according to Claim 15, for use as a gasket molding material.

17. A UV-curable liquid polyurethane resin according to Claim 16, for use as an HDD gasket molding material.

18. A UV-curable liquid polyurethane resin according to Claim 15, 16

or 17, applicable to an automatic coating robot.

19. A process for producing a gasket, characterized by coating a UV-curable liquid polyurethane resin of Claim 15 to a substrate at a temperature of 30° to 80℃, followed by ultraviolet ray irradiation to cause curing reaction and by a high temperature treatment at 100° to 180℃.